
PUBLIC HEALTH RESEARCH

Sexual Function and Sexual Frequency among Chinese Women in Hong Kong: Implications for Public Health Services

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ABSTRACT

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Introduction	Female sexual dysfunction (FSD) is a public health problem because of its high prevalence and harmful impacts on women's physical health, psychological well-being, and overall quality of life. The objective of this exploratory study was to identify risk factors of sexual dysfunction and assess the sexual function of Hong Kong Chinese women. Results were compared with findings on American women.
Methods	A questionnaire survey was conducted to collect data via convenience sampling. Participants of the study ($N = 1011$) were women (aged 18 or above) from diverse demographic backgrounds.
Results	Sexual function of Hong Kong Chinese women was generally adequate, but significantly lower than that of American women. Women of older age (41 years old or above), lower education (primary or below), divorced, in menopause or with oophorectomy were at risk of FSD. Women at risk of FSD also exhibited a decline of sexual frequency which implicated poor sexual health.
Conclusion	With the risk factors identified, public health professionals could implement targeted health services that would tackle the problems of FSD in good time and promote the sexual health of women who are distressed by the problems.
Keywords	Female sexual dysfunction - public health - Hong Kong Chinese women - risk factor - sexual frequency.

INTRODUCTION

Female sexual dysfunction (FSD) is a public health problem because of its high prevalence and deleterious effects on women's physical health, psychological well-being, and quality of life (QOL).¹ FSD is defined with reference to the phases of a normal sexual response cycle.² It refers to a persistent absence of desire, inability to get or stay sexually aroused, and difficulty in achieving orgasm in the sexual response cycle. It also denotes pain experienced during sexual intercourse and feelings of distress or dissatisfaction about one's sexual life.³ Thus, the classification of female sexual disorder by DSM-V and ICD-10 encompasses the above domains of desire, arousal, orgasm, pain, and distress.

The prevalence of FSD in Asian countries (30% to 52%)⁴ was comparable to that reported in the Western countries (25% to 63%).¹ In a population-based study in Hong Kong, sexual problems in orgasm and lubrication among Chinese women were found to be associated with women's mental ill-health, poor vitality, and life dissatisfaction.⁵ A survey study conducted in India also reported that married women with FSD, compared with those without FSD, were poorer in QOL assessed by the WHOQOL-BREF.⁶ Specifically, FSD exerted a detrimental effect on physical, psychological, social, and environmental health. Similar findings were observed in a clinical setting where FSD was associated with poor health-related QOL among women undergoing haemodialysis.⁷ In view of the harmful impacts of FSD, it is of great significance to public health professionals to identify its risk factors so that targeted services can be implemented for women affected by FSD.

A search of literature (via Medline, PubMed, and PsycINFO) found only two studies that looked into female sexual function in Hong Kong. One of which was conducted on a group of college students.⁸ It examined sexual behaviour, attitudes, and psychological distress more than FSD. Furthermore, the participants were younger in age (mean age = 20.5 years old) and a great majority of them were unmarried. The findings can hardly be generalized to Hong Kong Chinese women in general.

The other study utilized secondary data collected by the Hong Kong Family Planning Association to assess FSD of women aged 49 or below.⁴ The self-constructed survey items by the Association were of indeterminate reliability and validity. Moreover, the sexual function of unmarried women and women aged 50 or above were not included in the study.

To provide a better understanding of sexual function of Chinese women in Hong Kong, the present study was conducted on women from a wide spectrum of demographic backgrounds and

a standardized measure of female sexual function i.e., the *Female Sexual Function Index (FSFI)*⁹ was adopted for data collection. Based on data available, comparison of sexual function with that of US women was also made.

METHODS

This was a cross-sectional study which was part of a large scale survey study conducted by the Hong Kong Association of Sexuality Educators, Researchers, and Therapists - a non-profit interdisciplinary professional association for promoting sexual health in Hong Kong. Through the social network of the association, women from different demographic backgrounds were invited to participate in the questionnaire survey.

Questionnaire design

The questionnaire was divided into two parts. The first part collected information on demographic characteristics, sexual health condition (e.g., menopause status, pelvic surgery), and sexual frequency. The second part included the *Female Sexual Function Index (FSFI)* and items on vaginal intercourse difficulty and sexual attitudes collected for other research purposes.

The *FSFI* is a 19-item inventory measuring sexual function over the past 4 weeks in six domains (Desire, Arousal, Lubrication, Orgasm, Satisfaction, and Pain). The response format of four of the items is a 5-point Likert scale. Other items are scored on a scale from 0 to 5, with zero score represents no sexual activity. Ratings of 1 to 5 indicate level of sexual functioning (e.g., 1 = extremely difficult, 2 = very difficult, 3 = difficult, 4 = slightly difficult, 5 = not difficult). A raw score of 3 is the conceptual midpoint of individual domain items. The Full-scale scores are converted from the sum of the six domain scores, with a maximum score of 36 (conceptual midpoint = 18). A Full-scale score ≤ 18 was used as the cutoff point for FSD, based on which the odd ratios of various risk factors were estimated.

To keep the questionnaire within a feasible length, the measures of Desire and Arousal were reduced to two single-item scales, which assessed respectively frequency of sexual desire and sexual arousal. Their contributions to the Full-scale score were appropriately adjusted so that they carried the same weight as other domain scores. *FSFI* was shown to have satisfactory reliability (Cronbach's $\alpha \geq .82$) and contrasted-group validity in differentiating normal women from those with sexual arousal dysfunction.⁹ The reliability and validity of *FSFI* as applied to Hong Kong women would be examined based on data from this study.

Data collection procedure

Through the social network of the Hong Kong Association of Sexuality Educators, Researchers,

and Therapists, a convenience sampling method was adopted for data collection. Convenience sampling method was a non-probability sampling technique through which data were readily gathered from volunteers who were willing to participate in the survey study.¹⁰ It was a common sampling method used in many exploratory studies. In view of the exploratory nature of the present study, convenience sampling was also adopted for data collection and its limitations would be considered in the discussion of results of this study.

Participants were recruited from several sources which were accessible for data collection. These sources included outpatient clinics, institutes of higher education, and social services organizations. Data were also gathered through personal network (relatives, friends, and colleagues) of the investigators. To fulfill the objectives of the present study and to increase credibility of the sampling method, women from a broad spectrum of demographic backgrounds (in terms of age, education, income, and marital status) were invited to participate. Objectives and significance of the study were explained to potential participants individually or in small groups. After the briefing, questionnaires were distributed to women (aged 18 or above) who volunteered to participate. Thus, the questionnaires were filled in after informed consent. To ensure that the participation was anonymous, participants were asked to return the completed questionnaires in mail by using the stamped envelope provided. The sealed

questionnaires could also be dropped in a box located in the outpatient clinics, institutions, or organizations where participation in the survey study was solicited.

RESULTS

Of the 1197 questionnaires returned, data on 134 questionnaires were analyzed separately because the respondents' last sexual intercourse took place more than a month ago. Another 52 incomplete questionnaires were also excluded from data analysis. The final sample of this study consisted of 1011 participants.

Demographic characteristics of respondents

In contrast to the two previous studies conducted in Hong Kong,^{4,8} respondents of this study were of diverse demographic characteristics in terms of age, education, personal monthly income, and marital status (see Table 1).

Evaluation of reliability and validity of FSFI

Reliability of the domain scores of Lubrication, Orgasm, Satisfaction, and Pain was highly satisfactory (Cronbach α = .94 to .97). Cronbach α coefficient was not applicable to the single-item measure of Desire and Arousal. As Desire and Arousal formed a single factor,⁹ they were combined and their internal consistency was evaluated for academic interest. Spearman-Brown estimate which was appropriate for evaluating reliability of two-item measure¹¹ was computed and found to be satisfactory (.72).

Table 1 Demographic Characteristics of Respondents (N = 1011)

Characteristics	Frequency ^a	Percentage
Age Group		
18-20	48	4.8
21-30	274	27.2
31-40	316	31.3
41-50	230	22.8
51-60	122	12.1
≥61	18	1.8
Education		
Primary or below	88	9.5
Secondary	479	51.7
Diploma	159	17.2
Bachelor	151	16.3
Master or above	50	5.4
Marital Status		
Married	649	65.5
Cohabitated	46	4.6
Single	257	25.9
Divorced	39	3.9
Personal Monthly Income ^b		
HK\$ < 5000	113	12.8
HK\$5000-10000	242	27.5
HK\$10001-20000	322	36.6

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HK\$20001-30000	112	12.7
HK\$30001-40000	45	5.1
HK\$40001-50000	22	2.5
≥ HK\$50001	24	2.7

^aUnequal total sample size because of missing data

^bIn Hong Kong Dollar (1HK\$ = 0.13 US\$)

With regard to validity, women with oophorectomy were selected as the criterion group with which contrasted-group validity of *FSFI* was established.^{12,13} As predicted, the Full-scale score and all the domain scores including the single-item measure of Desire and Arousal were significantly lower among women with oophorectomy than those without [$F(1, 964) = 6.98$ to 19.75 , $p < .01$ to $.001$]. Using the Full-scale score of ≤ 18 as the cutoff point, women with oophorectomy were at greater risk of FSD than women without oophorectomy (OR = 2.29, 95% CI = 1.25 – 4.21).

Female sexual functioning: A comparative analysis

Based on availability of data,⁹ *FSFI* scores of a control (normal) sample and a clinical sample with female sexual arousal dysfunction (FSAD) from the US were compared with data of the present study. A sample of Hong Kong normal women who reported no sexual problems were selected from the main sample of this study for comparison (see Table 2).

Table 2 Comparison of Female Sexual Function of Hong Kong Women and Two US Samples

Sexual functioning	HK-Normal ^a (<i>N</i> =794)	US-Control ^b (<i>N</i> =130)	US-FSAD ^c (<i>N</i> =128)	t-value ^d (HK vs. US-Control)	t-value ^d (HK vs. US-FSAD)
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)		
Desire (frequency)	2.7 (1.0)	3.4 (1.0)	2.4 (1.1)	-7.37***	2.88**
Arousal (frequency)	3.1 (1.5)	4.4 (1.1)	2.6 (1.5)	-11.82***	2.84**
Lubrication	14.6 (6.4)	18.6 (3.2)	10.9 (5.5)	-11.05***	6.89***
Frequency	3.3 (1.6)	4.6 (0.9)	2.6 (1.5)		
Difficulty	3.9 (1.7)	4.7 (0.8)	2.8 (1.5)		
Maintaining frequency	3.4 (1.6)	4.6 (0.9)	2.5 (1.5)		
Difficulty in orgasm	3.9 (1.7)	4.7 (0.8)	3.0 (1.6)		
Orgasm	9.8 (4.5)	12.7 (3.2)	7.1 (4.1)	-8.98***	6.82***
Frequency (Freq.)	3.0 (1.5)	4.1 (1.2)	2.4 (1.5)		
Difficulty	3.6 (1.7)	4.3 (1.1)	2.5 (1.5)		
satisfaction	3.3 (1.6)	4.4 (1.1)	2.2 (1.4)		
Satisfaction	10.7 (4.8)	12.8 (3.0)	8.2 (3.6)	-7.66***	6.93***
Closeness with partner	3.6 (1.7)	4.3 (1.1)	3.4 (1.6)		
Sexual relationship	3.5 (1.6)	4.2 (1.1)	2.6 (1.4)		
Overall sex life	3.5 (1.6)	4.2 (1.1)	2.3 (1.2)		
Pain	10.4 (4.7)	13.9 (2.8)	10.1 (4.6)	-11.74***	0.68
Freq. during penetration	3.4 (1.6)	4.5 (1.1)	3.2 (1.7)		
Freq. after penetration	3.6 (1.6)	4.7 (1.0)	(1.7)		
Level	3.5 (1.7)	4.7 (0.9)	3.4 (1.5)		
Full-scale score	23.7 (9.4)	30.5 (5.3)	19.2 (6.6)	-11.76***	6.65***

^aHong Kong Chinese women reported no sexual problems (e.g. vaginal intercourse difficulty or oophorectomy)

^bUS-Control = US sample without female sexual arousal dysfunction

^cUS-FSAD = US sample with female sexual arousal dysfunction

^dDegree of freedom varied slightly because of missing data of the Hong Kong normal sample

** $p < .01$. *** $p < .001$

As shown in Table 2, the sexual function of Hong Kong Chinese women was generally adequate except for sexual desire which was slightly below the satisfactory level (i.e., below the conceptual midpoint of 3). Hong Kong normal women were significantly lower than the American control sample in sexual function. However, they enjoyed better status of sexual functioning than did the American women with FSAD, except for the Pain domain where the difference did not reach the level of statistical significance.

Demographic characteristics and FSD

ANOVA revealed that sexual functioning dropped significantly from 41 years old onwards, with women aged 60 or above exhibited the lowest sexual functioning [$F(4, 1004) = 17.48, p < .001$]. Women with primary education or below were lowest in sexual function, whereas sexual function of post-secondary diploma holders was

higher than that of women with bachelor or master degree [$F(4, 923) = 10.46, p < .001$]. Thus, education and sexual function exhibited a curvilinear relationship. No difference in sexual function between high and low income groups was observed. Cohabiting women enjoyed better status of sexual function than did married or single women, whereas divorced women scored the lowest on the FSFI [$F(3, 988) = 10.46, p < .001$].

Using the Full-scale score of ≤ 18 as the cutoff point for FSD, three risk factors related to demographic characteristics were identified (see Table 3). Women aged 41 or above, with primary or lower education, or divorced were of higher risk of FSD. Similar results on risk factors of FSD were obtained by adopting the empirical Full-scale cutoff score of ≤ 26.55 reported in the West.¹⁴

Table 3 Demographic Characteristics and Percentage of Sexual Dysfunction (Full-Scale score ≤ 18)

Characteristics	N ^a	Sexual Dysfunction	Chi-square value ^b	Odd Ratio (95% CI)
Age				
≤ 40 years old	603	15.1%	18.74***	2.07
≥ 41 years old	342	26.9%		(1.49 – 2.87)
Education:				
Secondary or above	791	19.3%	5.34*	1.88
Primary or below	77	31.2%		(1.13 – 3.16)
Personal monthly income ^c :				
≤ HK\$30000	746	17.7%	1.50	1.45
≥ HK\$30001	84	23.8%		(0.85 – 2.48)
Marital status:				
Married/ cohabitated	646	16.3%	14.82***	1.95
Single/ divorced	283	27.2%		(1.39 – 2.72)
Marital status:				
Married	603	16.6%	10.48**	3.14
Divorced	39	38.5%		(1.59 – 6.20)

^aUnequal total sample size because of missing data

^bChi-square values were based on frequency and were corrected for continuity

^cIn Hong Kong Dollar (1HK\$ = 0.13 US\$)

* $p < .05$. ** $p < .01$. *** $p < .001$

Factors associated with sexual frequency

As shown in Table 4, woman with lower FSFI scores engaged in sexual activity less frequently than those who scored higher.

Examination of the data revealed that 26% of younger women (≤ 40 years old) engaged in sexual activities at least twice a week, whereas only 13% of older women (≥ 41 years old) were that frequent in sexual activities. On the other hand, 49% of the younger women engaged in sexual activities rather infrequently (≤ 2 times a month), but 64% of the older women reported similarly infrequent sexual activities. The

association of old age and low sexual frequency was statistically significant ($\chi^2 = 54.16, df = 4, p < .001$).

One-third (34.1%) of women with primary or lower education were less frequent in sexual activities (< 1 a month) and only a small proportion of them (6.1%) enjoyed frequent sexual activities (≥ 2 a week). The respective proportions among women with education of secondary or higher were 21.5% and 22.8%. Chi-square test confirmed that the relationship between lower education and lower sexual

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frequency was statistically significantly ($\chi^2 = 15.45, df = 4, p < .01$).

Table 4 Relationship between Female Sexual Function and Frequency of Sexual Activity

	< 1 /month (N=223)	1-2/month (N=305)	1/week (N=234)	2/week (N=139)	≥3/week (N=68)	F (4, 964) ^a
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Desire ^b	2.2 ^a (1.1)	2.6 ^b (0.9)	2.9 ^b (1.0)	3.1 ^c (0.8)	3.2 ^c (1.1)	28.73***
Arousal ^b	1.8 ^a (1.7)	3.4 ^b (1.2)	3.4 ^{bc} (1.1)	3.7 ^c (1.0)	3.7 ^c (1.2)	81.53***
Lubrication	7.9 ^a (7.8)	16.1 ^b (4.2)	16.3 ^b (3.8)	16.7 ^b (3.7)	17.3 ^b (3.9)	117.55***
Orgasm	5.4 ^a (5.4)	10.9 ^b (3.2)	10.9 ^b (2.9)	11.7 ^b (2.6)	11.5 ^b (3.4)	100.39***
Satisfaction	5.8 ^a (5.8)	11.7 ^b (3.3)	12.1 ^{bc} (2.8)	12.8 ^c (2.6)	12.8 ^c (3.5)	114.62***
Pain	5.7 ^a (5.8)	11.3 ^b (3.5)	11.8 ^b (2.8)	12.0 ^b (2.8)	12.0 ^b (3.6)	96.57***
Full-scale	13.7 ^a (11.2)	25.6 ^b (5.9)	26.4 ^{bc} (5.1)	27.8 ^c (5.1)	27.7 ^{bc} (6.8)	124.53***

^aWithin group degree of freedom varied slightly because of missing data. Duncan test was used for post hoc multiple comparison. Means with the same superscripts were not significantly different.

^bSingle-item measure of frequency in sexual desire and sexual arousal.

*** $p < .001$

Sexual frequency was also affected by having children in the household. Nearly 25.0% of women without children engaged in sexual activities at least twice a week, only 17.6% of women who have children in the household reported similar sexual frequency (CR = 2.70, $p < .05$).

Cohabiting women engaged in sexual activities more frequently than did married women. More than one third (35.5%) of cohabiting women engaged in sexual activities at least twice a week, only one-fifth (20.1%) of married women were that frequent in sexual activities (CR = 2.44, $p < .05$). In comparing sexual frequency of divorced and married women,

a 2 x 2 Chi-square test was performed because of the small sample size of divorced women. The results confirmed that divorced women engaged in less frequent sexual activity than did married women ($\chi^2 = 4.49, df = 1, p < .05$).

Menopausal status, sexual function and sexual frequency

Women in menopause exhibited significantly lower level of sexual functioning (see Table 5). While 37.9% of women in menopause were at risk of FSD, only 16.3% of women in menstruation were at risk (OR = 3.14, 95% CI = 2.10 – 4.67).

Table 5 Relationship of Menopausal Status and Female Sexual Function

Sexual function	Menopausal status		F - value ^a
	Menstruation (N = 852) Mean (SD)	Menopause (N = 146) Mean (SD)	F (1, 996)
Desire (frequency)	2.8 (1.0)	2.1 (1.0)	48.75***
Arousal (frequency)	3.1 (1.5)	2.1 (1.5)	58.51***
Lubrication	14.8 (6.2)	9.9 (6.6)	74.98***
Orgasm	9.9 (4.5)	7.2 (4.9)	41.16***
Satisfaction	10.7 (4.7)	8.3 (5.5)	32.20***
Pain	10.4 (8.7)	7.9 (5.4)	34.57***
Full-scale	24.0 (9.1)	17.1 (10.0)	62.23***

^aWithin group degree of freedom varied slightly because of missing data.

*** $p < .001$

Menopause was also associated with low sexual frequency. A great majority (72.8%) of women in menopause had sex once or twice a month and only a small proportion (12.7%) of them engaged in sexual activities at least twice a

week. Among women in menstruation, the proportions were respectively 52.4% and 22.6%. Chi-square test confirmed that menopause was associated with low sexual frequency ($\chi^2 = 21.05, df = 2, p < .001$).

DISCUSSION

This study collects data of Hong Kong Chinese women from a broad spectrum of demographic backgrounds. The *FSFI* is found to be applicable to Hong Kong Chinese women in terms of its satisfactory reliability and validity. In particular, the contrasted-group validity of the two single-item measures of Desire and Arousal is also established.

Except for a lower level of sexual desire, the sexual function of Hong Kong women is considered adequate. Their sexual functioning is generally higher than that of US women with FSAD. In a way, this cross-national difference also provides supportive evidence for contrasted-group validity of the *FSFI*.

Chinese women in Hong Kong are significantly lower than an American normal sample in all the domains of sexual function measured by *FSFI*. This is not surprising as it is well established in cross-national studies that female sexual satisfaction is significantly higher in America than in many other countries.¹⁵ What is noteworthy is that both American and Hong Kong women score lowest on sexual desire, which parallels the observation that low sexual desire is the most common problem of FSD.^{1,16}

Low sexual desire is associated with many physiological and psychosocial factors. Decline in estrogen and testosterone, imbalance of hormone, side effects of certain medications (e.g., β -blockers, antidepressants, etc.), chronic diseases, relationship conflicts, negative emotions, and life stresses are common antecedents of low sexual desires. Besides, rigid religious upbringings and conservative sociocultural attitudes may also inhibit sexual desire among women. Some researchers even considered low sexual desire as an adaptive behaviour to sociocultural expectations rather than a problem of FSD.¹⁷ Whether low sexual desire is adaptive or dysfunctional remains a controversial issue among the clinicians. What is of special concern to public health professionals is its negative effects on women's emotion well-being, mental health, and overall QOL¹. There is thus a pressing need to detect FSD in an early stage so that targeted health services can be promptly implemented.

Several demographic characteristics are identified as risk factors of FSD in this study. Older in age (≥ 41 years old), lower education (primary or below), or being divorced are predictive of FSD. Contrary to a previous study on Hong Kong women (aged 49 or below) that found no effect of age on sexual dysfunction,⁴ this study confirms the age effect reported in the West.^{1,18} The significant finding emerges in this study as data on women aged 50 or above are included for analysis.

Aging is closely related to deterioration of sex steroids, which contributes to the development of FSD in several ways. For examples, atrophy of urogenital tissue, decrease in lubrication, and decrease in strength of vaginal contraction would lower the sexual functioning of older women. These biological changes that are associated with aging also account for the lower sexual frequency among older women.

In addition, traditional Chinese cultural beliefs proclaiming that sexual activities are inappropriate and that sex behaviour will bring disgrace to the elderly^{19,20} would also lower sexual desire of older women, which in turn bring about lower sexual frequency. Besides, many Hong Kong older women are living with adult children and some are in long-term care facilities where privacy for expression of sexual activity is lacking. Such unconducive social environments undoubtedly lower sexual desire, which also explain partly the reduction of sexual activities among the older women.

Consistent with findings reported in the West,^{1,18} women lower in education (primary or below) exhibit poorer sexual functioning and lower sexual frequency. However, the relationship of education and sexual function found in this study is curvilinear. Post-secondary diploma holders enjoy a better sexual functioning than do bachelor or master degree holders. Similar results are reported in Middle East where Iranian women with Master or PhD degree are lower than the diploma holders in sexual functioning.²¹ The reporting authors believe that the pressure and stress associated with higher education largely account for the findings. Their interpretation is plausible and may also applicable to findings of the present study. It has been reported that highly educated individuals are more inclined to experience social stress and job stress which leads to anxiety and depression.²² Relatedly, studies on female sexuality indicate that anxiety and depression result in FSD.²³ Thus, anxiety and depression may act as mediators between higher education and low sexual function. Surely, empirical studies are needed to verify this speculation. In any case, it appears that apart from providing sex counseling and sex education to women with low education, public health services should also be extended to those who are highly educated. To enhance sexual functioning of highly educated women, health professionals may need to explore if any stress or negative emotions would interfere with their sexual life.

The sexual function of divorced women is found poorer than that of married or single women. As prevalence of anxiety and depression is found higher in divorced women than among married or single women,²⁴ it is possible that anxiety and depression experienced by divorced

women may bring about a lower sexual function. In addition, lack of satisfying and committed relationships may also contribute to the lower sexual functioning and lower sexual frequency among divorced women.²⁵

Interestingly, compared with married women, cohabiting women enjoy better sexual functioning and engage in more frequent sexual activity. Perhaps, it is relevant to mention here that cohabiting women tend to hold a more liberal and less religious attitude towards sexuality.²⁶ It is likely that such open-minded attitudes enable them to enjoy a higher level of sexual functioning and sexual frequency.²⁷

View from a social exchange perspective, cohabitation involves less material and emotional commitment to stay together than does marriage.²⁸ The cost to end a relationship is lower among cohabitating couples who tend to rely more on sexual activity to keep them together. Hence, higher sexual frequency is found among cohabitating women and the impact of sexual frequency is weaker among women in marriage.²⁹ Understandably, the higher level of sexual frequency sexual function could be a self-selection process and also a consequence of cohabitation. Irrespective of the cause-and-effect relationship, our results confirm previous findings that sexual frequency and sexual function are higher in cohabiting women than among married women.³⁰

Menopause is found in this study to be associated with lower sexual function and sexual frequency. Evidently, cessation of menses is associated with a decline of estrogen and testosterone, which in many ways affects sexual function as discussed earlier. In addition, other somatic and psychological symptoms such as bodily discomforts, physical weariness, and mood fluctuation experienced by women in perimenopause and menopause may also bring about a lower level of sexual function and sexual frequency.

Low sexual frequency is indeed associated with many factors which are interrelated and are often linked with aging. For examples, decrease in estrogen and testosterone, menopause, oophorectomy, chronic illness, etc. are associated with aging and may simultaneously contribute to low sexual frequency. Other factors such as lower education, negative emotions, relationship conflicts, sociocultural attitudes that inhibit the expression of sexual needs are concomitant conditions of both low sexual function and low sexual frequency. Apparently, although sexual function and sexual frequency are conceptually different, both are empirically related to similar risk factors which may also be interactive in the process of affecting women's sexual health.

CONCLUSION

Except for sexual desire, sexual functioning of Hong Kong Chinese women is generally adequate. Nonetheless, it is significantly lower than that of American women. Women who are at risk of FSD also exhibit lower sexual frequency. Older in age, lower education, divorced, oophorectomy, and menopause are risk factors of sexual function and sexual frequency. With these risk factors being identified, public health professionals are in a better position to implement targeted sex counseling and sex education. Such health services not only would serve as a preventive measure, but also help to promote sexual health of women who are distressed by sexual dysfunction and low sexual frequency.

Limitations of the study

This is an exploratory study on sexual function and sexual frequency among women in Hong Kong, in which convenience sampling is adopted for data collection. Convenience sampling method is often used in exploratory study because of its low cost, ease of use, and availability of data¹⁰. In order to reduce possible sampling biases in this study, effort has been made to recruit women from a broad spectrum of demographic backgrounds and a relatively large sample size is secured. Yet, no claim is made that the recruited sample is representative of the population being studied. Hence, cautions should be taken in generalizing the findings to women in the general population.

As participation in the present study is voluntary, volunteer bias in sexuality research cannot be ruled out. It has been suggested that participants volunteered in sexuality research tend to report a more positive attitude towards sexuality³¹. Perhaps, replicated studies comparing data gathered in volunteering and non-volunteering settings may shed light on the issue of volunteer bias.

Despite of the above constraints, the risk factors identified in this study are consistent with that reported in the West.^{1,12,18,30} While the identified risk factors are predictive of FSD, it should be noted that they are not necessarily causal factor of FSD. As the design of this study is cross-sectional and correlational in nature, cautions should be taken in drawing conclusion on causal relationships. For example, although divorce in marriage is predictive of FSD, it is not necessarily a causal factor of FSD as it is also possible that FSD may lead to divorce in marriage. A longitudinal study should provide data that allow for a more conclusive inference on causal relationship.

Besides not to conclude causal relationship between certain risk factors and FSD, neither should we hastily infer causal relationship

between other variables of the present study. For example, data of the present study show that FSD is associated with a decline of sexual frequency. However, one should not jump to the conclusion that decline of sexual frequency is a result of FSD. It is likely that both variables may be a result of a third factor, e.g., aging. The effect of aging could be mediated by a decline of sex steroid hormones which lead to both FSD and decline of sexual frequency.

Notwithstanding of the limitations of this study, the data were collected via a standardized inventory (i.e., the *FSFI*) with demonstrated reliability and validity when applied in the local setting of Hong Kong. The findings provide empirical data on the current status of sexual function and sexual frequency among Hong Kong women from a wide spectrum of demographic backgrounds. Findings of this study not only would provide useful information for designing targeted intervention programmes for women afflicted by FSD, but also serve as a reference for future comparative studies.

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